WHAT IS CLAIMED IS:

1. An apparatus for reducing electromagnetic interference between a pair of antennas attached to a wireless communications device, wherein the apparatus is positioned proximate to a second antenna of the pair of antennas for intercepting electromagnetic energy radiated from a first antenna of the pair of antennas during transmission of a signal, and wherein the apparatus comprises a plurality of resonant circuit elements, each being configured to resonate at or near a carrier frequency of the transmitted signal for redirecting at least a portion of the electromagnetic energy away from the second antenna, thereby reducing the electromagnetic interference at the second antenna.

2. The apparatus of claim 1, wherein combined operation of the plurality of resonant circuit elements enable the apparatus to operate over a relatively wide range of band-gap frequencies.

3. The apparatus of claim 2, wherein the relatively wide range of band-gap frequencies comprises the carrier frequency of the transmitted signal and extends approximately two to four octaves above the carrier frequency.

4. The apparatus of claim 3, wherein the relatively wide range of band-gap frequencies further comprises a second carrier frequency, which along with the carrier frequency, is used by a dual-band radio module for transmitting/receiving signals via the first antenna.

5. The apparatus of claim 4, wherein the relatively wide range of band-gap frequencies further comprises a third carrier frequency, which is used by another radio module for transmitting/receiving signals via the second antenna.

6. The apparatus of claim 3, wherein the carrier frequency of the transmitted signal is equal to about 2.4 GHz, and wherein the range of band-gap frequencies extends from about 2.3 GHz to about 9.6 GHz.

7. The apparatus of claim 1, wherein the apparatus is configured to resonate by setting various dimensions of the apparatus to some fraction of a wavelength of the transmitted signal.

8. The apparatus of claim 7, wherein a length of the apparatus is substantially equal to one-half of the transmission signal wavelength.

9. The apparatus of claim 8, wherein the plurality of resonant circuit elements form a periodic surface that is substantially less than one-tenth of the transmission signal wavelength.

10. The apparatus of claim 9, wherein a material composition of the apparatus is selected from a group of conductive materials having a relative permittivity value between about 0.0 F/m and about 1.0 F/m and a relative permeability value between about 10 H/m and about 100,000 H/m, thereby enabling the apparatus to minimize a primarily magnetic component of the radiated electromagnetic energy.

11. The apparatus of claim 10, wherein the apparatus comprises a thin strip of metal, which has been cut and folded into a plurality of rectangular elements, wherein the plurality of rectangular elements are connected to and arranged above a common reference plane by a plurality of vertical segments, and wherein the rectangular elements, vertical segments and common reference plane combine to form the plurality of resonant circuit elements.

12. The apparatus of claim 11, wherein a lower surface of the plurality of rectangular elements is separated from an upper surface of the common reference plane by a dielectric material.

13. The apparatus of claim 10, wherein the apparatus comprises a thin strip of metal, which has been cut and folded into a plurality of A-shaped elements separated by a plurality of horizontal segments, and wherein the plurality of A-shaped elements and horizontal segments combine to form the plurality of resonant circuit elements.

14. The apparatus of claim 10, wherein the apparatus comprises a thin strip of metal, which has been cut and folded into a plurality of domed segments separated by a plurality of slots, and wherein the plurality of domed segments and slots combine to form the plurality of resonant circuit elements.

15. The apparatus of claim 10, wherein the apparatus comprises an elongated metal structure, which has been molded to form a plurality of vertical elements, which are periodically coupled to a common reference plane at various locations, and wherein the plurality of vertical elements and various locations combine to form the plurality of resonant circuit elements.

16. A method for reducing electromagnetic interference between two or more antennas coupled to a wireless communication device, wherein the electromagnetic interference occurs at a second antenna due, in part, to the close proximity of the second antenna to a first antenna, and wherein the method comprises:

coupling the first antenna and the second antenna to a surface of the communications device, wherein the first and second antennas are spaced from each other by a relatively short distance, such that electromagnetic energy radiated from the first antenna interferes with a substantially concurrent operation of the second antenna; and

coupling an apparatus to the communication device, wherein upon intercepting the electromagnetic energy radiated from the first antenna, the step of coupling the apparatus enables a portion of the electromagnetic energy to be redirected away from the second antenna, thereby reducing the electromagnetic interference at the second antenna while conserving the electromagnetic energy radiated from the first antenna.

17. The method of claim 16, wherein the method further comprises transmitting a signal by radiating the electromagnetic energy from the first antenna, wherein the electromagnetic energy propagates through free space as a plane wave having minimum and maximum electromagnetic energy levels at various locations along the

surface of the communications device, and wherein the various locations correspond to fractional amounts of a wavelength of the transmitted signal.

18. The method of claim 17, wherein the step of coupling the first and second antennas comprises spacing the second antenna from the first antenna, such that a receiving end of the second antenna is positioned at a furthest location of minimum electromagnetic energy available along the surface.

19. The method of claim 18, wherein the step of coupling the apparatus comprises arranging the apparatus between the first and second antennas, such that a center of the apparatus is positioned at a location of maximum electromagnetic energy.

20. The method of claim 19, wherein the location of maximum electromagnetic energy immediately precedes the second antenna and the furthest location of minimum electromagnetic energy.

21. The method of claim 19, wherein the location of maximum electromagnetic energy immediately follows the first antenna and a first location of minimum electromagnetic energy.

22. The method of claim 19, further comprising providing the apparatus with a periodic surface that resonates with the electromagnetic energy radiated from the first antenna to produce a plurality of standing wave patterns, which then combine to redirect the portion of the electromagnetic energy away from the second antenna.

23. The method of claim 22, wherein the steps of providing the apparatus and coupling the apparatus enable the electromagnetic interference to be reduced without absorbing the electromagnetic energy radiated from the first antenna or decreasing a transmission power level of the transmitted signal.

24. The method of claim 23, wherein the steps of providing the apparatus and coupling the apparatus provide an insertion loss of about –25 dB to about –35 dB between the first and second antennas.